AMENDMENT TO THE CLAIMS

1. (Currently Amended) A cache-coherent input/output device comprising:

a plurality of client ports, each to be coupled to one of a plurality of port components;

a plurality of sub-unit caches, each coupled to one of said plurality of client ports and assigned to one of said plurality of port components; and

a coherency engine coupled to said plurality of sub-unit ~~caches;~~ caches.

~~wherein the plurality of client ports, the plurality of sub-unit caches and the coherency engine are integrated onto a single cache-coherent device~~.

2. (Original) The device of claim 1 wherein said plurality of port components include processor port components.

3. (Original) The device of claim 1 wherein said plurality of port components include input/output components.

4. (Original) The device of claim 3 wherein said plurality of sub-unit caches include transaction buffers using a coherency logic protocol.

5. (Original) The device of claim 4 wherein said coherency logic protocol includes a Modified-Exclusive-Shared-Invalid (MESI) cache coherency protocol.

6. (Currently Amended) A processing system comprising:

a processor;

a plurality of port components; and

~~an integrated~~ a cache-coherent input/output device coupled to said processor and including a plurality of client ports, each coupled to one of said plurality of port components, said cache-coherent device further including a plurality of caches, each coupled to one of said plurality of client ports and assigned to one of said plurality of port components, and a coherency engine coupled to said plurality of caches.

7. (Original) The processing system of claim 6 wherein said plurality of port components include processor port components.

8. (Original) The processing system of claim 6 wherein said plurality of port components include input/output components.

9. (Currently Amended) In a cache-coherent input/output device including a coherency engine and a plurality of client ports, a method for processing a transaction, comprising:

receiving a transaction request at one of a plurality of client ports on ~~an integrated~~ the input/output cache-coherent device ~~with a coherency engine~~, said transaction request includes an address; and

determining whether said address is present in one of a plurality of sub-unit caches, each of said sub-unit caches assigned to said one of ~~a~~ said plurality of client ports.

10. (Original) The method of claim 9 wherein said transaction request is a read transaction request.

11. (Original) The method of claim 10 further comprising:

transmitting data for said read transaction request from said one of said plurality of sub-unit caches to one of said plurality of client ports.

12. (Original) The method of claim 11 further comprising:

prefetching one or more cache lines ahead of said read transaction request; and

updating the coherency state information in said plurality of sub-unit caches.

13. (Original) The method of claim 12 wherein the coherency state information includes a Modified-Exclusive-Shared-Invalid (MESI) cache coherency protocol.

14. (Original) The method of claim 9 wherein said transaction request is a write transaction request.

15. (Original) The method of claim 14 further comprising:

modifying coherency state information for a cache line in said one of said plurality of sub-unit caches;

updating coherency state information in others of said plurality of sub-unit caches by said coherency engine; and

transmitting data for said write transaction request from said one of said plurality of sub-unit caches to memory.

16. (Original) The method of claim 15 further comprising:

modifying coherency state information of said write transaction request in the order received; and

pipelining multiple write requests.

17. (Original) The method of claim 16 wherein the coherency state information includes a Modified-Exclusive-Shared-Invalid (MESI) cache coherency protocol.